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 20 November 1961

MEMORANDUM FOR: TALENT Control Officers
 (See Distribution)

SUBJECT: Camera Information for Mission 9028, KH-2 Camera System

1. The following technical information necessary for the reduction of quantitative data obtained from photography of mission 9028 is forwarded for your information.

a. This photography involves the use of three cameras: a main camera, a port horizon camera, and a starboard horizon camera.

b. Operational Focal Lengths

(1) Main lens	609.168 mm
(2) Port horizon lens	89.00 mm
(3) Starboard horizon lens	89.05 mm

Definition: "Operational focal length" is defined as the distance from the main lens nodal point to the film surface as measured on the lens bench and the data reduced for a vacuum condition. (Operational focal length is equivalent focal length corrected for environment)

c. Lens Distortion

(1) Main lens (pincushion)	
plus .005mm at 3 degrees	
plus .003mm at $2\frac{1}{2}$ degrees	
(2) Port Horizon Lens	
a. radial	.003mm at 10 degrees
	.035mm at 20 degrees
b. tangential	.002mm max.
(3) Starboard Horizon Lens	
a. radial	.004mm at 10 degrees
	.038mm at 20 degrees
b. tangential	.008mm max.

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d. Depression Angle of Horizon Cameras Relative to Nominal Main Camera

- | | |
|------------------------------|----------------------|
| (1) port horizon camera | 15deg. 11min. 10sec. |
| (2) starboard horizon camera | 14deg. 28min. 08sec. |

e. Image Motion Compensation

IMC provided on Mission 9028 is similar to that provided on Missions 9019 and 9017 in that the linear changes in the IMC velocity is coupled to a 15 minute clock which recycles in time for the next pass.

Scan velocity can be determined by counting the frequency marks which are imaged on the format edge.

Ramp 4 Passes 1de and 2d

Ramp 5 All other passes

<u>Ramp 4</u>	<u>Beginning</u>	<u>End</u>
Cycle period	3.68 sec.	2.58 sec.
Scan velocity	47.42 in/sec.	66.72 in/sec
IMC velocity	.520 cos θ	.732 cos θ

<u>Ramp 5</u>		
Cycle period	3.67 sec.	2.38 sec.
Scan velocity	46.90 in/sec.	72.33 in/sec.
IMC velocity	.515 cos θ	.734 cos θ

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(1) Main lens	Filter	Wratten no. 21
	Aperture	f/5
	Exposure	1/500 sec.
	Slit width	0.725 inches
(2) Horizon lens	Filter	Wratten no. 25
	Aperture	f/6.8
	Exposure	1/200 sec.

g. Resolution Capabilities

(1) Main lens --82.7 1/mm avg., measured on O-17 film

(2) Port horizon lens --39 1/mm avg., measured on super XX film

(3) Starboard horizon lens --38.5 1/mm avg., measured on super XX film

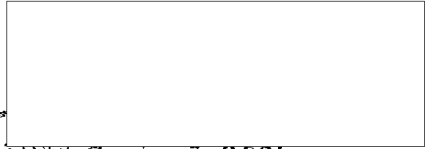
h. Timing Marks

There will be frequency marks on the film in this mission. They will image at a rate of 160 cycles per second and will make possible the determination of the scan velocity and IMC rate. The "pips" will appear on the leading edge of the frame format.

i. Film Information

Film used on Mission 9028 was SO 130.

50X1


 TALENT Control Officer
 National Photographic Interpretation Center

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